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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,130	11/07/2001	Wolfram Fleck	1748X/50543	4667

7590 08/27/2003

CROWELL & MORING, L.L.P.
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Washington, DC 20044-4300

EXAMINER

PARSONS, THOMAS H

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,130

Applicant(s)

FLECK ET AL.

Examiner

Thomas H Parsons

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 4-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Andreoli et al. (5,605,770).

Claim 1: Andreoli et al. in Figure 1 disclose a fuel cell system (col. 3: 19-col. 5: 55) comprising: a reservoir (col. 3: 29-31 which discloses a hydrogen delivery line for delivering hydrogen from **a pressurized tank of liquid hydrogen**) for cryogenic media for providing a fuel; a fuel cell unit containing at least one fuel cell (1, 2) connected to receive fuel from the reservoir (col. 2: 19-28); a cooling circuit for cooling the fuel cell unit (primary cooling circuit including cooling sections 7 and 8, and 44, 32, 45, 46, 47, and secondary cooling circuit including 24 and 26); and a heating circuit (10, 11, 13, 23 and associated sensors and valves) including at least one first heat exchanger (10) for heating cryogenic medium provided from said reservoir to said fuel cell unit (col. 3: 29-col. 4: 6), said heating circuit being coupled directly to the cooling circuit for the fuel cell unit (col. 5: 50-55).

Claim 4: Andreoli et al. disclose that the cooling circuit of the fuel cell unit includes a second heat exchanger (50 with fan), in the form of a convection heat exchanger (col. 5: 33-38).

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Claim 5: Andreoli et al. disclose that a plate-type heat exchanger is provided as the first heat exchanger (col. 5: 50-55).

Claim 6: Andreoli et al. disclose that the cryogenic medium is liquid hydrogen (col. 3: 29-31).

Claim 7: Andreoli et al. disclose that the fuel cell unit comprises at least one PEM fuel cell (1,2) (col. 3: 24-28).

Claim 8: Andreoli et al. disclose in Figure 1 a method for generating gaseous fuel from a cryogenic medium in a fuel cell system (col. 3: 19-col. 5: 55) which includes a reservoir for storing said cryogenic medium (col. 3: 29-31 which discloses a hydrogen delivery line for delivering hydrogen from a **pressurized tank of liquid hydrogen**), a fuel cell unit (1,2) coupled to receive said gaseous fuel, and a cooling circuit for circulating a cooling medium for cooling said fuel cell unit (primary cooling circuit including cooling sections 7 and 8, and 44, 32, 45, 46, 47, and secondary cooling circuit including 24 and 26), said method comprising: transferring heat from said cooling medium (air and water) to said cryogenic medium by means of a heat exchanger (26, 46 and 10) connected between said reservoir and said fuel cell unit, by causing cooling medium from said cooling circuit to flow through said heat exchanger.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andreoli et al. as applied to claim 1 above, and further in view of Gaarder et al. (6,647,698).

Andreoli et al. are as applied, argued, and disclosed above, and incorporated herein.

Andreoli et al. do not disclose a cooling device provided within the heating circuit of the reservoir, for cooling the power electronics of the fuel cell system.

Gaarder et al. disclose in Figure 3 a cooling device (32) provided within the heating circuit of the reservoir, for cooling the power electronics of the fuel cell system (col. 3: 37-col. 4: 18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Andreoli et al. by incorporating the cooling system of Gaarder et al. because both are concerned with water as a byproduct of the fuel cell, and Gaarder et al. teach a cooling system utilizing the byproduct water that would have removed excess heat generated by the fuel cell and other electrical components of the system thereby enabling the fuel cell to run within its most efficient temperature range, and extending the life of the fuel cell.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andreoli et al. as applied to claim 1 above, and further in view of Bloomfield (4,004,947).

Andreoli et al. are as applied, argued, and disclosed above, and incorporated herein.

Andreoli et al. do not disclose a condenser provided within the heating circuit of the reservoir, for condensing a medium of the fuel cell system.

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Bloomfield in Figure 1 discloses a condenser (18) provided within the heating circuit of the reservoir, for condensing a medium (cathode effluent) of the fuel cell system (col. 3: 58 - col. 4: 13).


Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Andreoli et al. by incorporating the condenser of Bloomfield because both are concerned with recovering condensate, and Bloomfield discloses a condenser that would have used anode and cathode gas stream effluent to power a turbine for compressing an oxidant wherein the oxidant is then supplied to the fuel cell at high pressure thereby improving the efficiency of the power plant and providing economic advantages.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H Parsons whose telephone number is (703) 306-9072. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (703) 308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Thomas H Parsons
Examiner
Art Unit 1745


CAROL CHANEY
PRIMARY EXAMINER
